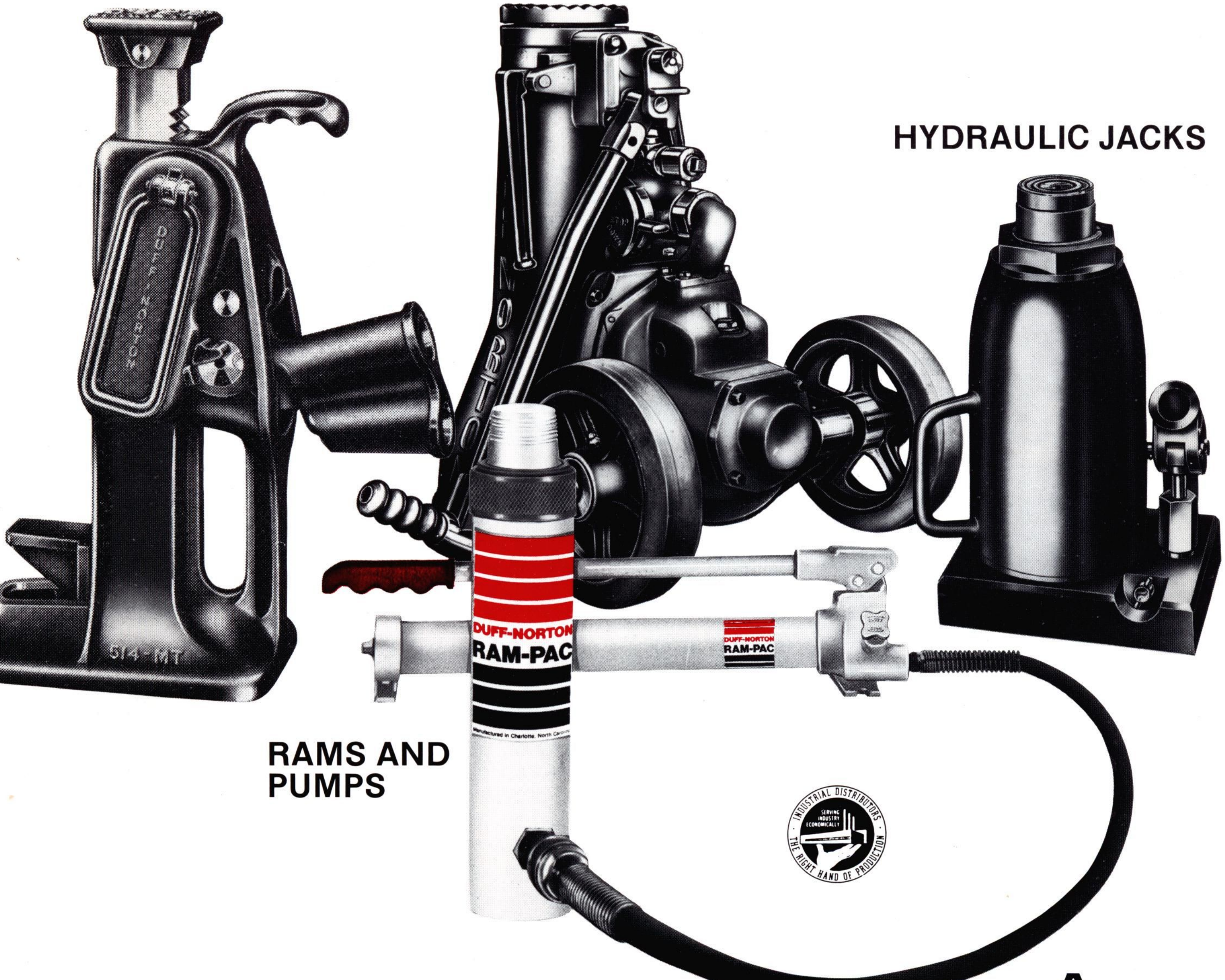
DUFF-NORTON JACK MANUAL



INDUSTRIAL DISTRIBUTORS
SERVING INDUSTRY ECONOMICALLY
THE RIGHT HAND OF PRODUCTION

Amstar
CORPORATION

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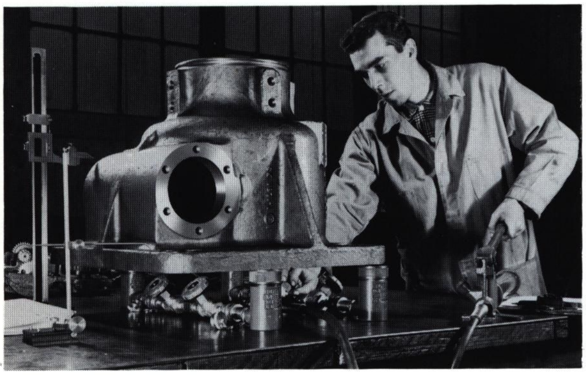
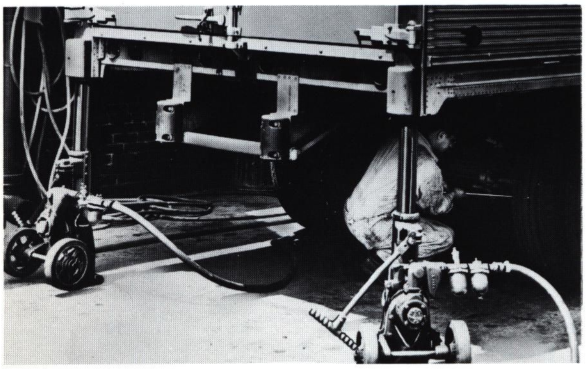

Four Ram-Pac rams interconnected with one hand pump, to raise heavy casting.


Two 20-ton air motor jacks lifting loaded truck trailer to facilitate repairs.

Steel trench braces as used by contractor to brace large pipeline trench.

The Importance of Industrial Distribution

The Duff-Norton Company firmly believes that the most efficient, economical method of purchasing industrial goods is through recognized industrial distributors.

Recognized distributors perform a wide variety of services over and above the mere furnishing of industrial products. They evaluate those products for their ultimate users. They maintain large inventories for the convenience of buyers. They are available for emergency deliveries around-the-clock. And they are experts on all of the products they stock and sell, can talk intelligently about them, answer questions and offer valid suggestions for their use.

In short, the recognized industrial distributor is more than a seller of merchandise. He is a *specialist* in the evaluation, distribution and use of industrial products. Duff-Norton believes that industrial distributors can and do save industrial buyers both time and money.

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HOW TO SELECT THE CORRECT JACK

Weight of load—This is the first consideration. However, the following points also are important:

Height of jack and "raise"—See pages 2 and 3. For general use, jack should have fairly high raise, for a variety of applications.

Speed of lifting and lowering—Ratchet jacks are fastest but are limited to lighter loads. Screw and hydraulic types are more powerful but slower.

Type of lowering—Ratchet jacks are available with either trip or ratchet lowering, or combination of both. Screw jacks are available in manual or self-lowering models.

Safety—Be sure jack selected will handle load safely. Be sure to position jack squarely on a firm lifting surface.

Weight of jack—If jack will be moved frequently, select lightest weight of desired capacity. Many models with identical lifting power are available with either malleable iron or aluminum housings.

Constant service—For a jack which will be in constant use, consider lowering and lifting speed, operating and handling ease, simplicity of maintenance and repair.

For close quarters—Small head jacks are best for narrow spaces because they can be spotted squarely under the load. Where space is plentiful, large head jacks give more load-gripping area.

Use of foot lift—Most ratchet and many screw jacks are equipped with foot lifts for getting a good "toehold" close to ground.

Jack cost—When two or more jacks will fill requirements, price and application should be determining factors. However, quality, maintenance and serviceability also should be considered.

Definitions

Rack—The notched square bar on ratchet jacks that rises as lever is operated.

Foot-lift—Protruding toe or "foot" near base. For lifting low loads.

Pawls—Fastened to lever socket and frame, they have teeth which fit into notches of rack, providing grip that raises, lowers and holds the rack.

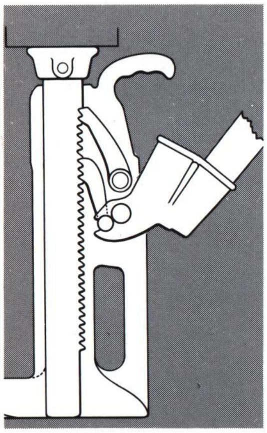
Single acting—Jack is lifted only on downward stroke of lever, lowered only on up-stroke.

Double acting—Jack lifts load on both upward and downward strokes.

Trip jack—For use where necessary to drop the load quickly. Trip jacks cannot be lowered notch by notch.

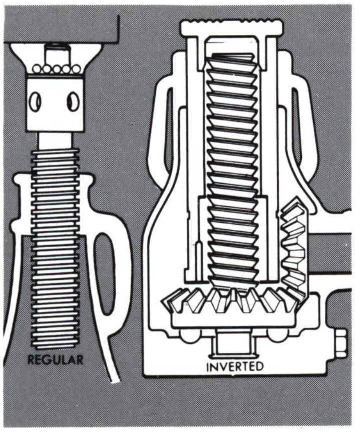
NOTE: Some Duff-Norton jacks are designed for lowering notch by notch when loaded and for tripping, if desired, when unloaded.

THERE ARE FOUR BASIC TYPES OF JACKS



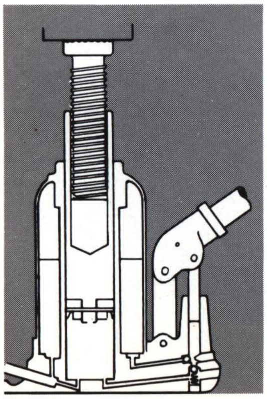
1. Ratchet

Simplest construction. Employs the basic lever and fulcrum principle. Downward stroke of the lever raises rack bar one notch at a time and the pawls spring into position, automatically holding the load and releasing the lever for the next lifting stroke. Use should be limited to lighter loads, usually to 20 tons, because of physical effort required. Advantages are less expensive construction, fast operation.



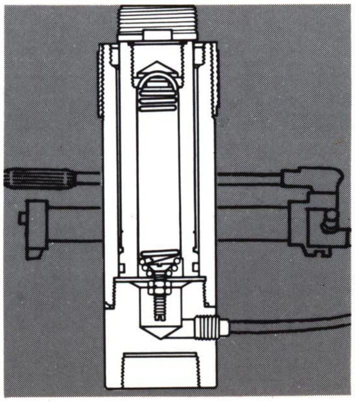
2. Screw

For lifting heavier loads, the screw and nut principle is used. Two general types—regular and inverted. For lighter loads a simple lever bar will apply sufficient power to turn screw but as loads increase, gear reductions and ratchet devices are used to multiply the operator's strength. In the heaviest jacks the screw is operated by an air motor for faster lifting and lowering without effort.



3. Hydraulic—Integral Pump

Employs the tremendous power of hydraulics to lift heavy loads with little effort. Unit pressure exerted on a small area of incompressible fluid is transmitted undiminished to a larger area in the same closed circuit, thus multiplying the exerted force. Not as fast in operation as ratchet type. Excellent for easy lifting of heavy loads.



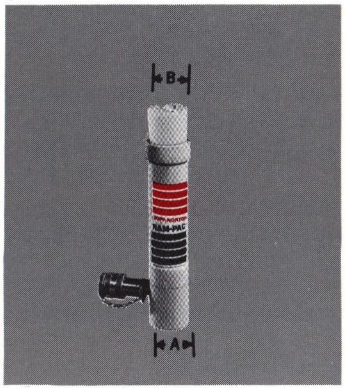
4. Hydraulic Ram—Separate Pump

Operates on same principle as hydraulic jacks, but pump is in separate unit so that workman can operate the pump at a safe distance from the load. Rams provide maximum amount of travel for a given closed height. Various pumps may be used—powered by hand, electric motor, air motor or gasoline engine.

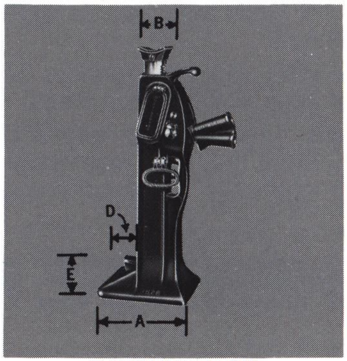
JACK SELECTION CHART

SPECIFICATIONS							DIMENSIONS					
Capacity Tons	Jack No.	Type of Jack*	Closed Height Inches	Raise Inches	Weight Pounds	Page No.	A	B	C	D	E	F
3	3-H-9	H	8½	9½	15	8	3¾x6⅝	1⅛	—	—	—	—
5	514-MT	R	14	7½	36	9	5¼x7¾	2½x2¾	—	2½	1½	—
5	516-MT	R	16	9½	41	9	5¼x7¾	2½x2¾	—	2½	1½	—
5	521-MT	R	21	14½	47	9	5¼x7¾	2½x2¾	—	2½	1½	—
5	5-H-9	H	9	10¼	18	8	4⅛x7⅛	1⅜	—	—	—	—
8	8-H-9	H	9	10½	21	8	4⅝x7⅞	1½	—	—	—	—
10	1017	R	17¼	9	75	9	7x10	3x3	—	2½	2¼	—
10	1020	R	20	11½	77	9	7x10	3x3	—	2½	2¼	—
10	1022	R	22	12	84	9	7x10	3x3	—	2½	2¼	—
10	T-11	S	8	7	37	13	7⅛	3½	—	—	—	—
12	1½x8	S	10¾	5	13	13	6	3⅛	—	—	—	—
12	1½x10	S	12¾	8	16	13	6⅛	3⅛	—	—	—	—
12	1½x12	S	14¾	9	18	13	6½	3⅛	—	—	—	—
12	12-H-9	H	9¼	8¾	27	8	4⅝x8⅜	1¾	—	—	—	—
15	1522	R	22	11½	100	9	8x11	3x3½	—	2½	2½	—
15	1523	R	23	12½	124	10	7½x10¾	2¾x4	—	2½	2¼	—
15	1528	R	28	17½	117	9	8x11	3x3½	—	2½	2½	—
15	1-A	R-T	22	13	60	11	6½x11	3x3	—	2½	2	—
15	117	R-T	22	12	70	11	6½x11	3x3	—	2½	2	—
15	117-A	R-T	22	12	45	11	6½x11	3x3	—	2½	2	—
15	517-BA	R-T	11½	5	30	11	6½x10¼	—	—	2½	2	—
15	617	R-T	28	18½	87	11	7x12	3x3	—	2½	2	—
15	717-BA	R-T	14	7½	34	11	6½x10¼	—	—	—	2	—
15	1507	S	7	2½	27	12	4¾	2¾	3⅛	—	—	5¾
15	111-C-2	S	10	5	31	12	4¾	2¾	3½	—	—	5⅜
16	1¾x10	S	13½	7½	22	13	6¾	3⅞	—	—	—	—
20	2028	R	28	18	126	9	8x11	3x3½	—	2½	2½	—
20	2x8	S	11¾	5	24	13	6⅝	3⅞	—	—	—	—
20	2x10	S	13¾	7	28	13	6¾	3⅞	—	—	—	—
20	2x12	S	15¾	9	33	13	7¾	3⅞	—	—	—	—
20	20-H-11-S	H	10¾	7¾	46	8	5½x7	2¼	—	—	—	—
20	228-R	A	28	18	240	17	12	4	—	—	—	14
25	29-A	R	27¾	15¼	180	10	7	4x4	—	3	2¾	—
25	2509-C-2	S	9	4½	46	12	5⅜	3	3½	—	—	6 9/16
25	2510-C-2	S	10	5	48	12	5⅜	3	3½	—	—	6 9/16
25	2510-A-2	S	10	5	40	12	5⅜	3	3½	—	—	6 9/16
25	825-L	S	12¼	4½	27	13	6¾	3⅞	—	—	—	—
25	25-H-7.5	H	7½	4	36	8	5x7	2½	—	—	—	—
25	25-H-8.7	H	8¾	4	48	8	5x7	—	—	—	—	—
25	25-H-9.3	H	9⅜	6	40	8	5x7	2½	—	—	—	—
30	30-H-11	H	11	7	67	8	6x8½	3	—	—	—	—
35	2835	S-S	28	15¾	211	13	12	4	5½	—	—	10½
35	3510-A-2	S	10	5	46	12	5⅞	3⅝	3⅝	—	—	6 13/16
35	3510-C-2	S	10	5	57	12	5⅞	3⅝	3⅝	—	—	6 13/16
35	3265-BB	S-S	26	14	226	14	12	6¼	4½	3	4	7
35	326-R	A	26	14⅜	275	17	14	4	—	—	—	14
35	35-H-7.7	H	7¾	4	52	8	6x8	2⅝	—	—	—	—
35	35-H-9.7	H	9.7	6	60	8	6x8	2⅝	—	—	—	—
50	5261-BB	S-S	26	14½	288	14	13¾	6	—	—	—	11½
50	5265-BB	S-S	26	14½	331	14	14	10	6	5	4½	11½
50	5010-C-2	S	10	4½	77	12	7⅛	4	3⅞	—	—	8¼
50	5010-A-2	S	10	4½	64	12	7 3/16	4	3⅞	—	—	8¼
50	2850	S-S	28	15½	261	13	14	5½	5½	—	—	11½
50	2650	S-S	26	13½	259	13	14	5½	5½	—	—	11½
50	50-H-12	H	12	7	121	8	7½x10	3¾	—	—	—	—
50	524-RX	A	23⅝	12½	370	17			—	—	—	18
50	528-RX	A	28	17	394	17	—	—	—	—	—	18
50	528-AE	E	28	17	348	17	—	—	—	—	—	—
50	536-RX	A	36	25	425	17	—	—	—	—	—	18
50	536-AE	E	36	25	379	17	—	—	—	—	—	—

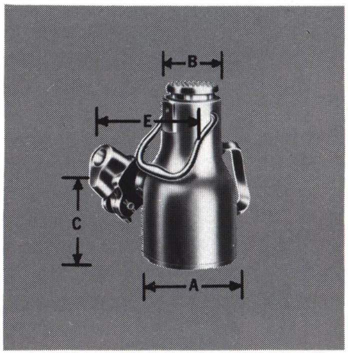
Weights shown include operating lever where applicable.



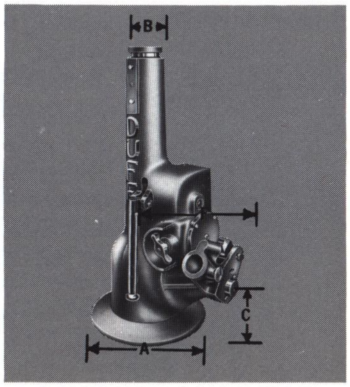
RAM-PAC RAM



RATCHET JACK



LOW-HEIGHT SCREW JACK



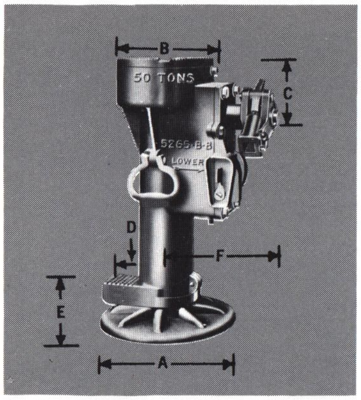
GOVERNOR-CONTROLLED SCREW JACK

* Symbols for Types of Jacks:

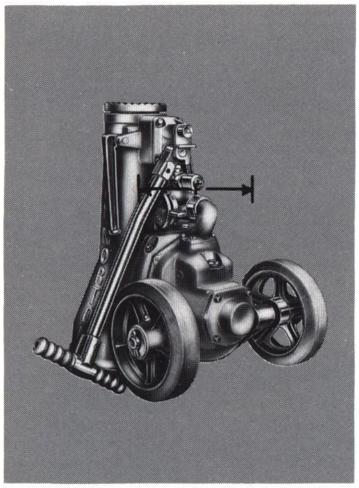
R—Ratchet
R-T—Ratchet, Trip-Lowering
S—Screw
S-S—Screw, Self-Lowering
S-C—Screw, Detachable Claw
H—Hydraulic, Integral Pump
H-I—Hydraulic, Independent Pump
A—Screw, Air Motor Powered
E—Electric Drill Powered

Red figures indicate jacks with foot lift.

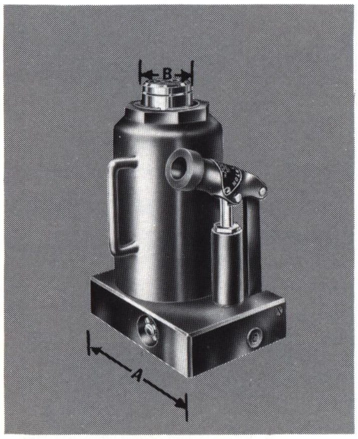
All dimensions are in inches.



SELF-LOWERING SCREW JACK



AIR MOTOR POWERED SCREW JACK



INTEGRAL HYDRAULIC JACK

SPECIFICATIONS / DIMENSIONS

Capacity Tons	Jack No.	Type of Jack*	Closed Height Inches	Raise Inches	Weight Pounds	Page No.	A	B	C	D	E	F
100	100-A-12	S	12	4	120	12	—	—	3⅞	—	—	7⁹⁄₁₆
100	100-C-12	S	12	4	157	12	—	—	3⅞	—	—	—
100	100-H-12	H	12	6⅛	220	8	—	—	—	—	—	—
100	1265-BB	S-S	26	12	431	14	—	—	11¼	4½	4½	11¾
100	1263-C	S-S	26	13½	421	14	—	—	10	—	—	13
100	126-RX	A	26	14	448	17	—	—	—	—	—	18
100	144-RX	A	44	30	530	17	—	—	—	—	—	18
100	126-AE	E	26	14	402	17	—	—	—	—	—	—
100	144-AE	E	44	30	484	17	—	—	—	—	—	—

CABLE REEL JACKS

5	520-CR	S	20	11½	87	15	9x19	—	—	—	—	—
5	524-MCR	R	21	14	74	10	12½ 26½	—	—	—	—	—
5	530-CR	S	30	16½	110	15	15½x38½	—	—	—	—	—
10	1022-CR	R	38	12	126	10	9¾x24	—	—	—	—	—
10	1030-CR	R	30	14	134	10	—	—	—	—	—	—

RAM-PAC RAMS

Capacity (Tons) Pushing	Pulling	Ram Model Number	Type	Closed Height Inches	Raise Inches	Weight Pounds	Page No.	A Base Dia.	B Plunger or Cover Shell Dia.	C	D	E	F
Single-Acting Rams													
10	—	RC-10-H-4.6-S	H-I	4⅝	2¼	9	4	2½	1½	—	—	—	—
10	—	RC-10-H-11.7-A	H-I	11¹¹⁄₁₆	6³⁄₁₆	13	4	2¼	1½	—	—	—	—
20	—	RC-20-H-11.2-A	H-I	11⁵⁄₁₆	5⅛	25	4	3⅜	2³⁄₁₆	—	—	—	—
30	—	RC-30-H-4.5-2	H-I	4½	2⁷⁄₁₆	16	4	4¼	2⅝	—	—	—	—
30	—	RC-30-H-10-A	H-I	10	6	31	4	4	2⅝	—	—	—	—
50	—	RC-50-H-4.7	H-I	4¾	2⅛	26	4	5	3½	—	—	—	—
50	—	RC-50-H-11-B	H-I	11	6⅛	54	4	5	3½	—	—	—	—
100	—	RC-100-H-5.7	H-I	5¾	2	65	4	7	4¹¹⁄₁₆	—	—	—	—
100	—	RC-100-H-11-B	H-I	11	5	108	4	7	4¹¹⁄₁₆	—	—	—	—
Double-Acting Rams													
10	5	RC-10-DA-17.2	H-I	17¼	11½	24	5	2½	1⅛	—	—	—	—
20	10	RC-20-DA-15.2	H-I	15¼	9¾	34	5	3⅜	1⁹⁄₁₆	—	—	—	—
20	10	RC-20-DA-21.6	H-I	21⅝	16⅛	46	5	3⅜	1⁹⁄₁₆	—	—	—	—
30	15	RC-30-DA-14.9	H-I	14¹⁵⁄₁₆	9	47	5	4	1¹⁵⁄₁₆	—	—	—	—
30	15	RC-30-DA-21.9	H-I	21¹⁵⁄₁₆	16	66	5	4	1¹⁵⁄₁₆	—	—	—	—
50	25	RC-50-DA-11.9	H-I	11¹⁵⁄₁₆	5¼	61	5	5	2¾	—	—	—	—
50	25	RC-50-DA-19.9	H-I	19¹⁵⁄₁₆	13¼	98	5	5	2¾	—	—	—	—
100	50	RC-100-DA-13.7	H-I	13¾	6⅝	130	5	7	3½	—	—	—	—
100	50	RC-100-DA-20.2	H-I	20¼	13⅛	182	5	7	3½	—	—	—	—
Center-Hole Rams													
10	—	RC-10-CH-5.3	H-I	5⁵⁄₁₆	2½	8½	6	3	2¹⁄₁₆	—	—	—	—
20	—	RC-20-CH-6	H-I	6¹⁄₁₆	3	18	6	4	2¾	—	—	—	—
30	15	RC-30-CH-7	H-I	7¹⁄₁₆	3	24¼	6	4½	2½	—	—	—	—
60	30	RC-60-CH-9.5	H-I	9½	5	62	6	6¼	4	—	—	—	—

TRAVERSING BASES

Capacity Tons	Jack No.	Type of Jack*	Height Inches	Horizontal Travel Inches	Weight Pounds	Size of Plate Inches	Page No.	A	B	C	D	E	F
50	40-TB-26	S	4⅜	26	134	10x12	12	—	—	—	—	—	—
100	41-TB-20	S	4	20	151	14 dia.	12	—	—	—	—	—	—

PUSH & PULL JACKS

Capacity Tons	Jack No.	Type of Jack*	Screw Diameter Inches	PUSHING		PULLING		Weight Pounds	Page No.
				Closed Inches	Extended Inches	Closed Inches	Extended Inches		
10	1024	S	2	7¾	21½	5¾	19½	48	15
10	1029	S	2	7¾	25½	5¾	23½	51	15
15	1538	S	2½	7½	34	7½	34	98	15

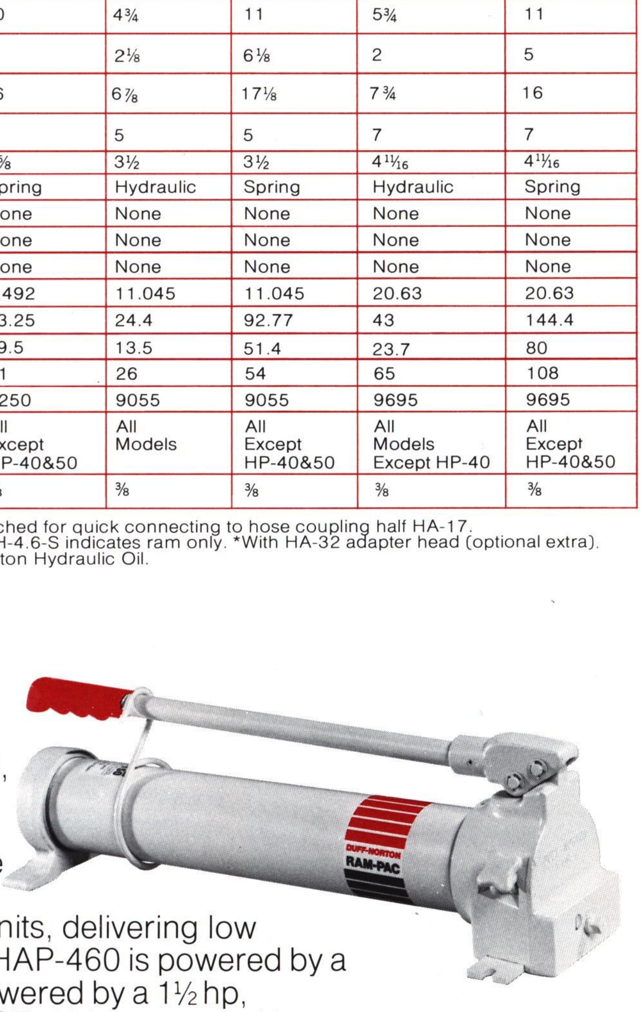
SINGLE-ACTING RAM-PAC® RAMS

Duff-Norton Ram-Pac Single-Acting Rams are designed for maximum travel in relation to closed height, and have fewer working parts for a minimum of maintenance. High-strength materials are used throughout. Bodies are made from solid steel bar stock on short rams and seamless steel tubing on tall rams. Cylinders are roller burnished to a high microinch work-hardened finish and plungers are turned and ground during manufacture to assure smooth, efficient operation. Rams with B designation are equipped with bronze gland nuts and plunger rings. There are sizes and capacities for virtually every job.

Ram Model No.	RC-10-H-4.6-S	RC-10-H-11.7-A	RC-20-H-11.2-A	RC-30-H-4.5-2	RC-30-H-10-A	RC-50-H-4.7	RC-50-H-11-B	RC-100-H-5.7	RC-100-H-11-B
Capacity (Tons)	10	10	20	30	30	50	50	100	100
Closed Height (In.)	4⅝ 5¹³⁄₁₆ *	11¹¹⁄₁₆	11⁵⁄₁₆	4½	10	4¾	11	5¾	11
Plunger Travel (In.)	2¼	6³⁄₁₆	5⅛	2⁷⁄₁₆	6	2⅛	6⅛	2	5
Extended Height (In.)	6⅞ 8 ¹⁄₁₆ *	17⅞	16⁷⁄₁₆	6¹⁵⁄₁₆	16	6⅞	17⅛	7¾	16
Base Diameter (In.)	2½	2¼	3⅜	3⅞	4	5	5	7	7
Plunger or Cover Shell Dia.(In.)	1½	1½	2³⁄₁₆	2⅝	2⅝	3½	3½	4¹¹⁄₁₆	4¹¹⁄₁₆
Type of Plunger Retraction	Spring	Spring	Spring	Hydraulic	Spring	Hydraulic	Spring	Hydraulic	Spring
Base Thread (Female)	None	1¼ NPT	2 NPT	None	None	None	None	None	None
Collar Thread (Male)	2¼—14	2¼ —14	3⁵⁄₁₆—12	None	None	None	None	None	None
Plunger Thread	1¼ NPT	1¼ NPT	2 NPT	None	None	None	None	None	None
Effective Ram Area (Sq. In.)	2.074	2.074	4.43	6.492	6.492	11.045	11.045	20.63	20.63
Oil Capacity (Cu. In.)	5.5	16.25	30.7	16.25	53.25	24.4	92.77	43	144.4
Oil Capacity (Oz.)	3.1	9	17	9	29.5	13.5	51.4	23.7	80
Weight (Lbs.)	9	13	25	16	31	26	54	65	108
Working Pressure (PSI)	9650	9650	9050	9250	9250	9055	9055	9695	9695
Recommended with Pumps	All Models	All Models	All Models	All Models	All Except HP-40&50	All Models	All Except HP-40&50	All Models Except HP-40	All Except HP-40&50
Pipe Thread Connection	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜

NOTE: All rams above preceded with RC have ram-half coupling HA-18 attached for quick connecting to hose coupling half HA-17.
If ram is desired without coupling omit C when ordering. For example R-10-H-4.6-S indicates ram only. *With HA-32 adapter head (optional extra).
For best operating results, and to protect your warranty, always use Duff-Norton Hydraulic Oil.

RAM-PAC PUMPS



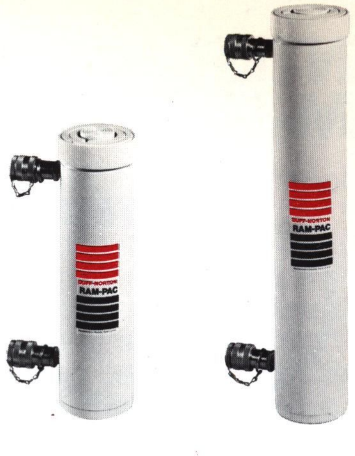
Hand Pumps: HP-40 and HP-50 are single-speed, high-pressure, lightweight models. HP-150 is a two-speed model, permitting fast approach at low pressure until the load is engaged; it then shifts to higher pressure. HP-150-V is also a two-speed model, but equipped with a 4-way valve for use with Double-Acting Rams.

Power Pumps: All three models are fast-acting, two-stage units, delivering low volume at high pressure and high volume at low pressure. HAP-460 is powered by a 2 hp air motor that operates on 80 to 120 psi. HEP-460 is powered by a 1½ hp, 3450 rpm, 115 VAC, 60 Hz, single-phase electric motor. HGP-460 is powered by a 4-cycle gasoline engine developing 3½ hp at 3600 rpm; it is ideal for field work.

Pump Model No.	Usable Oil Cap. (Cu. In.)	Max. Working Pressure (PSI)	Pump Plunger Area (Sq. In.)	Pump Plunger Dia. (In.)	Pump Plunger Stroke (In.)	Pump Plunger Displacement (Cu. In.)	*Pump Delivery (Cu. In. / Min.)	Effort Required (Lbs.)	Low Speed By-pass Pressure (PSI)	Hi Speed By-pass Pressure (PSI)	Pipe Thread Conn. (In.)	Handle Length (In.)	Length (In.)	Width (In.)	Height (In.)	Weight (Lbs.)
HP-40	30	10,000	.196	½	1	.196	4.0	110	—	—	⅜ NPT	14	18	5⅜	5⅝	11
HP-50	45	10,000	.196	½	1	.196	4.0	110	—	—	⅜ NPT	20	24	5⅜	5⅝	16
HP-150	143	10,000	s—.196 l—.785	s—½ l—1	1	s—.196 l—.785	s—4.0 l-16.0	110	10,000 max. adjustable	500 max. adjustable	⅜ NPT	20	25	7	7	29
HP-150-V	143	10,000	s—.196 l—.785	s—½ l—1	1	s—.196 l—.785	s—4.0 l-16.0	110	10,000 max. adjustable	500 max. adjustable	⅜ NPT	20	26½	7	7	30

* Based on 20 strokes per minute.

DOUBLE-ACTING RAM-PAC RAMS



Duff-Norton Ram-Pac Double-Acting Rams have two distinct advantages: they provide more plunger travel than other types of rams having the same closed height, and they retract under hydraulic power to permit pulling. The pulling (lowering) capacity is one-half the lifting capacity. High-strength materials are used throughout. Two carrying handles are attached to the bodies of both 50 and 100-ton units. Lifting and pulling overload relief valves are built into 100-ton models.

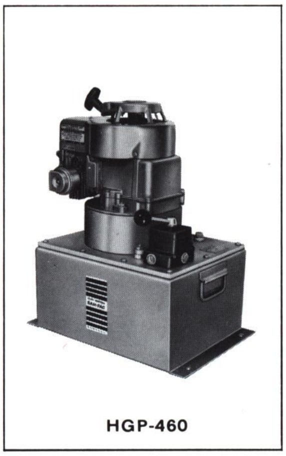
Ram Model No.	RC-10-DA-17.2	RC-20-DA-15.2	RC-20-DA-21.6	RC-30-DA-14.9	RC-30-DA-21.9	RC-50-DA-11.9	RC-50-DA-19.9	RC-100-DA-13.7	RC-100-DA-20.2
Capacity—Pushing (Tons) Pulling (Tons)	10 5	20 10	20 10	30 15	30 15	50 25	50 25	100 50	100 50
Closed Height (In.)	17¼	15¼	21⅝	14¹⁵⁄₁₆	21¹⁵⁄₁₆	11¹⁵⁄₁₆	19¹⁵⁄₁₆	13¾	20¼
Plunger Travel (In.)	11½	9¾	16⅛	9	16	5¼	13¼	6⅝	13⅛
Extended Height (In.)	28¾	25	37¾	23¹⁵⁄₁₆	37¹⁵⁄₁₆	17³⁄₁₆	33³⁄₁₆	20⅜	33⅜
Base Diameter (In.)	2½	3⅜	3⅜	4	4	5	5	7	7
Plunger or Cover Shell Diameter (In.)	1⅛	1⁹⁄₁₆	1⁹⁄₁₆	1¹⁵⁄₁₆	1¹⁵⁄₁₆	2¾	2¾	3½	3½
Type of Plunger Retraction	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic
Base Thread (Female)	(4)⁵⁄₁₆-24	(4)½-20	(4)½-20	(4)⅝-18	(4)⅝-18	(4)⅝-18	(4)⅝-16	(4) 1⅛-12	(4) 1⅛-12
Collar Thread (Male)	2¼-14	3⁵⁄₁₆-12NS 2A	3⁵⁄₁₆-12NS 2A	4-12	4-12	5-12	5-12	6⅞-12	6⅞-12
Plunger Thread	¾-16	1-14	1-14	1¼-12	1¼-12	2-16	2-16	2½-12	2½-12
Effective Ram Area— Pushing (Sq. In.) Pulling (Sq. In.)	2.074 1.080	4.43 2.36	4.43 2.36	6.49 3.35	6.49 3.35	11.045 5.105	11.045 5.105	20.63 10.31	20.63 10.31
Oil Capacity (Cu. In.)	24	44	73	60	106	60	149	140	284
Oil Capacity (Oz.)	13.3	24.4	40.4	33.2	58.7	33.2	82.5	77.6	157.3
Weight (Lbs.), Approx.	24	34	46	47	66	61	98	130	182
Working Pressure— Pushing (PSIG) Pulling (PSIG)	9650 9250	9030 8470	9030 8470	9250 8950	9250 8950	9055 9800	9055 9800	9700 9700	9700 9700
Recommended with Pumps	All Except HP-40,50 &150	All Except HP-40,50 &150	All Except HP-40,50 &150	All Except HP-40,50 &150	All Except HP-40,50 &150	All Except HP-40,50 &150	Power Pumps with 4-way valve	Power Pumps with 4-way valve	Power Pumps with 4-way valve
Pipe Thread Connection (NPT)	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜

NOTE: All rams above preceded with RC have ram-half coupling HA-18 attached for quick-connecting to hose-half coupling HA-17. If ram is desired without coupling, omit C when ordering. Example: R-10-DA-17.2 indicates ram only.
For best operating results, and to protect your warranty, always use Duff-Norton Hydraulic Oil.

RAM-PAC POWER PUMPS

HAP-460

HEP-460

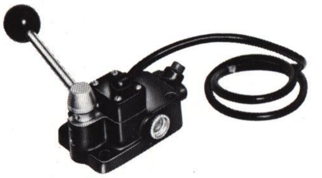


HGP-460

Pump Model No.	HAP-460	HEP-460	HGP-460
Oil Reservoir Capacity Cubic Inches Ounces	462 256	462 256	1155 640
Usable Oil Capacity Cubic Inches Ounces	360 200	360 200	1040 576
Constant Working Pressure (psi)	10,000	10,000	10,000
Pipe Thread Connection (In.)	⅜ NPT	⅜ NPT	⅜ NPT
Net Wt. (Lbs.) Approx.	78	78	88
Pumping Capacity (Cu. In./Min.) @100 psi @10,000 psi	600 55	600 55	600 55
Dimensions Height (In.) Base Size (In.)	17½ 10½ x 12½	20¼ 10½ x 12½	20¾ 12½ x 18

HYDRAULIC ACCESSORY VALVES FOR POWER PUMPS

NOTE: Hydraulic Accessory Valve is required for each Ram-Pac Power Pump, according to type of ram. See details below. Order separately.



HVE-3—Used on Power Pump Model HEP-460 with Single-Acting Ram-Pac Rams. Three-way lever-operated with metered return; detent-positioned; with control lever in "hold" or "return" positions, switch shuts off pump motor. Use for faster ram return.

HVAG-3 —Used on Power Pump Models HAP-460 or HGP-460 with Single-Acting Ram-Pac Rams. Three-way lever-operated; detent-positioned; has "advance" and "return" positions.

HVDA-4 —Used on Power Pump Models HAP-460, HEP-460 or HGP-460 with Double-Acting Ram-Pac Rams. Four-way lever-operated; detent-positioned; has "advance," "neutral" and "return" positions; cylinder ports are blocked in "neutral" and pump flow is directed to reservoir.

CENTER-HOLE RAM-PAC RAMS

Duff-Norton Ram-Pac Center-Hole Rams have a hollow piston that can accept forcing screws, cables, rods or other accessories. A smooth saddle is provided; others are optional at extra cost. The 10 and 20-ton models are single-acting, with a spring-return for longer stroke and faster return. The 30 and 60-ton models are double-acting rams that retract quickly under hydraulic power to permit pulling; a pump with 4-way valve is required. Bronze-plated piston rods in all models resist wear caused by side-loading.

THREADED SADDLE (OPTIONAL)

PLAIN SADDLE (STANDARD)

SERRATED SADDLE (OPTIONAL)

Ram Model No.	Capacity (Tons) Pushing	Capacity (Tons) Pulling	Closed Height (In.)	Plunger Travel (In.)	Extended Height (In.)	Base Diameter (In.)	Center Hole Dia. (In.)	Type of Plunger Retraction	Base Thread (Female)	Plunger Insert Hole Thread
RC-10-CH-5.3	10	—	5 5/16	2½	7 13/16	3	¾	Spring	(2) ¼-20	¾"-16
RC-20-CH-6	20	—	6 1/16	3	9 1/16	4	1 1/16	Spring	(2) ⅜-16	1"-8
RC-30-CH-7	30	15	7 1/16	3	10 1/16	4½	1¼	Hydraulic	(2) ⅜-16	1¼"-7
RC-60-CH-9.5	60	30	9½	5	14½	6¼	2⅛	Hydraulic	(2) ½-13	1⅝"-5½

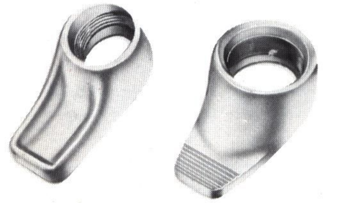
Ram Model No.	Effective Ram Area (Sq. In.) Pushing	Effective Ram Area (Sq. In.) Pulling	Oil Capacity (Cu. In.) Pushing	Oil Capacity (Cu. In.) Pulling	Oil Capacity (Oz.)	Weight (Lbs.)	Working Pressure (PSIG) Pushing	Working Pressure (PSIG) Pulling	Recommended with Pumps	Pipe Thread Connection (NPT)
RC-10-CH-5.3	2.21	—	5.50	—	3	8½	9,050	—	All Except HP-150-V	⅜
RC-20-CH-6	3.92	—	11.75	—	6.5	18	10,200	—	All Except HP-150-V	⅜
RC-30-CH-7	5.875	4.30	17.6	12.9	17	24¼	10,200	10,200	All Except HP-40, 50 & 150	⅜
RC-60-CH -9.5	12.35	5.17	61.7	25.9	48.5	62	9,700	9,700	All Except HP-40, 50 & 150	⅜

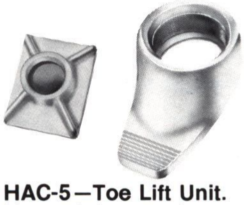
NOTE: All rams above have ram-half coupling HA-18 attached for quick-connecting to hose-half coupling HA-17.
For best operating results, and to protect your warranty, always use Duff-Norton Hydraulic Oil.

ACCESSORIES FOR RAM-PAC RAMS AND PUMPS

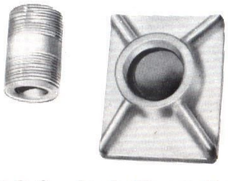
HA-2—Close Nipple, hex body, ⅜" male thread
HA-3—Pipe Tee, ⅜" female thread outlets
HA-4—Shut-Off Valve, ⅜" female thread
HA-5—Jack Body Toe for 10-Ton Ram
HA-6—Push-Pull Toe for 10-Ton Ram
HA-7—10-Ton Jack Base
HA-8—Extension 2½", 5", 10", 20", 30"
HA-9—Extension Coupling
HA-10—Heavy Duty Chain
HA-11—Chain Pull Plate for 10-Ton Rams
HA-12-1—Gage, measures 0 to 10, 20, 30 tons and 10,000 psig
HA-12-2—Gage, same as above, with maximum reading indicator
HA-13-1—Gage, measures 0 to 50, 100 tons and 10,000 psig
HA-13-2—Gage, same as above, with maximum reading indicator
HA-14—Maximum Reading Indicator
HA-15—Gage Fitting (Furnished with each gage)
HA-16—Gage Adapter, for hose or pump connection ⅜" male and female thread
HA-19—Hose (6') with two ⅜" male pipe fittings
HA-20—Fitting for attaching additional hose
HA-21—Reducing Adapter ⅜" female to ¼" male
HA-22—Serrated Top for 10-Ton Rams
HA-25—Hydraulic Spreader ⅜" Thread Inlet
HA-30—Street Ell ⅜" male and female thread
HA-31—Pipe Cross ⅜" female thread
HA-32—Adapter Head Assembly
HA-33—Casters for all power pumps
HAC-2—Quick Connect Coupling, complete ⅜" male and female thread
HAC-3—Hose (6') with ⅜" male pipe fitting one end and hose half coupling other end

RAM-PAC ATTACHMENT UNITS FOR TEN-TON RAMS


HAC-4—Spreader Unit. Will spread from 1¼" clearance up to 7¼" for the tall 10-ton ram and to 4⅛" for the short 10-ton ram without extension tube. Maximum spread limited by tube bending under load.

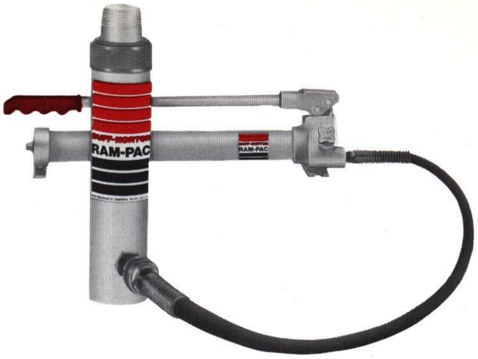

HAC-5—Toe Lift Unit. Has minimum clearance of 1¼" maximum lift for tall 10-ton ram and 2⅞" for the short 10-ton ram without extension tube.

HAC-6-5—Extension Unit. Last dash number indicates length of extension tube in inches. For longer tubes, change dash number to 10, 20 or 30. (5" unit shown.)


HAC-8—Jack Base Unit. Increases stability of ram. Extends closed height by 2¼".

HAC-7—Pull Chain Unit. Chain pull plate with 6' of ⅜" heavy-duty steel chain. (4 tons maximum.)

COMPLETE RAM-PAC UNITS



Complete Duff-Norton Ram-Pac units—consisting of ram, hand pump, 6 feet of high-pressure hose and couplings—provide portable, remotely-controlled power for many production, maintenance and testing applications. The ram can be positioned in a restricted space, with the operator actuating the pump from a safe distance. Units are listed according to type of ram supplied; for ram details, see pages 4, 5 and 6.

Capacity (Tons)		Plunger Travel (In.)	Ram Closed Height (In.)	Ram No.	Pump No.	Hose No.	ORDER COMPLETE RAM-PAC MODEL NO.
Pushing	Pulling						
WITH SINGLE-ACTING RAM-PAC RAM							
10		2¼	4⅝ 5¹³⁄₁₆ *	RC-10-H-4.6-S	HP-50	HAC-3	PR-10-H-4.6-S
10		6³⁄₁₆	11¹¹⁄₁₆	RC-10-H-11.7-A	HP-50	HAC-3	PR-10-H-11.7-A
20		5⅛	11⁵⁄₁₆	RC-20-H-11.2-A	HP-50	HAC-3	PR-20-H-11.2-A
30		2⁷⁄₁₆	4½	RC-30-H-4.5-2	HP-50	HAC-3	PR-30-H-4.5-2
30		6	10	RC-30-H-10-A	HP-150	HAC-3	PR-30-H-10-A
50		2⅛	4¾	RC-50-H-4.7	HP-50	HAC-3	PR-50-H-4.7
50		6⅛	11	RC-50-H-11-B	HP-150	HAC-3	PR-50-H-11-B
100		2	5¾	RC-100-H-5.7	HP-150	HAC-3	PR-100-H-5.7
100		5	11	RC-100-H-11-B	HP-150	HAC-3	PR-100-H-11-B
WITH DOUBLE-ACTING RAM-PAC RAM							
10	5	11½	17¼	RC-10-DA-17.2	HP-150-V	HAC-3	PR-10-DA-17.2
20	10	9¾	15¼	RC-20-DA-15.2	HP-150-V	HAC-3	PR-20-DA-15.2
20	10	16⅛	21⅝	RC-20-DA-21.6	HP-150-V	HAC-3	PR-20-DA-21.6
30	15	9	14¹⁵⁄₁₆	RC-30-DA-14.9	HP-150-V	HAC-3	PR-30-DA-14.9
30	15	16	21¹⁵⁄₁₆	RC-30-DA-21.9	HP-150-V	HAC-3	PR-30-DA-21.9
50	25	5¼	11¹⁵⁄₁₆	RC-50-DA-11.9	HP-150-V	HAC-3	PR-50-DA-11.9
WITH CENTER-HOLE RAM-PAC RAM							
10		2½	5⁵⁄₁₆	RC-10-CH-5.3	HP-50	HAC-3	PR-10-CH-5.3
20		3	6¹⁄₁₆	RC-20-CH-6	HP-50	HAC-3	PR-20-CH-6
30	15	3	7¹⁄₁₆	RC-30-CH-7	HP-150-V	HAC-3	PR-30-CH-7
60	30	5	9½	RC-60-CH-9.5	HP-150-V	HAC-3	PR-60-CH-9.5

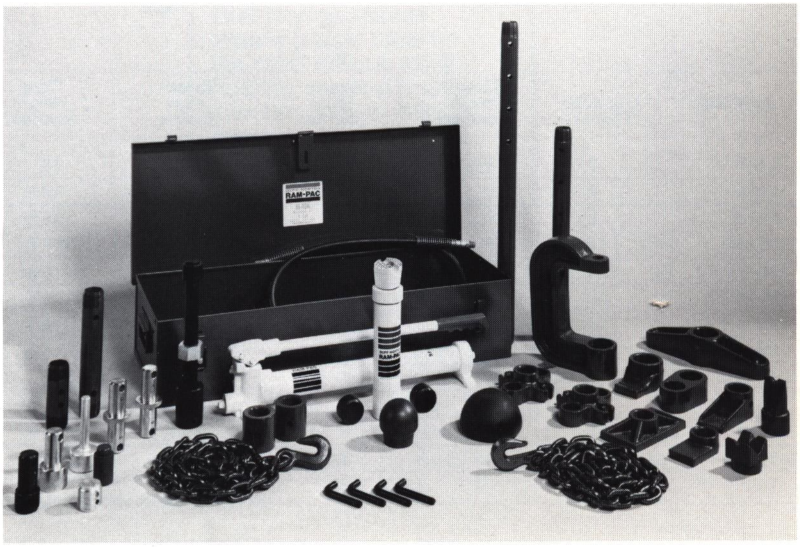
*With HA-32 adapter head (optional extra).
For best operating results, and to protect your warranty, always use Duff-Norton Hydraulic Oil.

COMPLETE MAINTENANCE KITS

Duff-Norton Ram-Pac units are available in complete plant maintenance kits, consisting of a ram, pump, 6 feet of high-pressure hose with couplings, and a variety of accessories specially selected for such diverse maintenance jobs as lifting, pushing, spreading, bending, clamping, and straightening. Each kit is contained in a single heavy-duty metal storage box that can be carried in emergency or maintenance vehicles, or carted to the point of use. Offered in 3 sizes: 4, 10 or 20 tons.

NOTE: The use of toe lifts, collar lifts, chain pull units and similar accessories reduces the lifting capacity by one-half.

For best operating results, and to protect your warranty, always use Duff-Norton Hydraulic Oil.



INTEGRAL RAM-PAC UNITS

Duff-Norton Integral Ram-Pac Units feature ram and pump in one compact package. All 3 to 12-ton models have extension screws which can be run up quickly to load height. Lifting starts with the first stroke of the lever bar. 25 and 35-ton models have patented air vents to prevent "air lock." Weight is 25% less than other makes of equal capacities. Bases are drilled for gages calibrated to show the load weight being lifted (except 25 and 35-ton jacks, which can be drilled if requested). Gages are optional at extra cost. For further details, request Duff-Norton catalog AD-16c.

**25-H-8.7
TIMBER JACK**

**3-H-9
5-H-9
8-H-9
12-H-9**

20-H-11-S

**25-H-7.5
25-H-9.3
35-H-7.7
35-H-9.7**

**30-H-11
50-H-12
100-H-12**

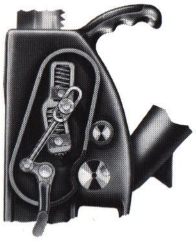
30, 50 and 100-ton models have two-speed pumps for fast advance to load, and automatic changeovers for high pressure work.

Jack No.	Capacity (Tons)	Closed Height (Inches)	Power Raise (Inches)	Extension Screw	Total Height (Inches)	Head Diameter (Inches)	Base Size (Inches)	Handle Length (Inches)	Weight (Lbs.)
3-H-9	3	8½	6	3½"	18	1	3½ x 6¼	20½	14¼
5-H-9	5	9	6¼	4"	19¼	1¼	4¼ x 6⅝	20½	17¾
8-H-9	8	9	6¼	4¼"	19½	1½	4½ x 6⅞	20½	20½
12-H-9	12	9	5½	3¼"	17¾	1¾	4¾ x 7½	20½	27
20-H-11-S	20	10¾	7¾	None	18½	2¼	5½ x 7	20½	44
25-H-7.5	25	7½	4	None	11½	2⅛	5 x 7	23½	37½
25-H-8.7	25	8¾	4	None	12¾		5 x 7	20	48
25-H-9.3	25	9⅜	6	None	15⅜	2⅛	5 x 7	23½	42
30-H-11	30	11	7	None	18	2⅜	6 x 8½	20	71
35-H-7.7	35	7¾	4	None	11¾	2⅝	6 x 8	23½	51
35-H-9.7	35	9¾	6	None	15¾	2⅝	6 x 8	23½	62½
50-H-12	50	12	7	None	19	3¼	7½ x 9⅞	20	125
100-H-12	100	12	6	None	18	4⅜	9½ x 12	20	208

For best operating results, and to protect your warranty, always use Duff-Norton Hydraulic Oil.

Weights shown include operating lever where applicable.

DUFF-NORTON RATCHET JACKS



Outstanding Features

Exclusive, patented spring mechanism is a one-piece, self-contained unit. It can be adjusted, repaired or replaced easily, without dismantling jack. Load is raised or lowered one notch at a time—down stroke for raising and up stroke for lowering.

Jacks cannot be tripped when under load. Rack bars are larger and stronger than in ordinary jacks—can be pulled up by hand to meet the load.

Hinged covers are recessed in housing, to protect lifting mechanisms. Fulcrum centers are located for utmost speed and ease of lifting.

514-MT
516-MT
521-MT

5 TONS—Single-acting, ratchet-lowering with foot lift. Furnished with high-strength heat-treated, double round sockets and steel operating lever 1" x 30". *When jack is not under load,* head can be dropped or tripped instantly.

USES—For moving, lifting and bracing lighter loads of all kinds. Because rack bar can be dropped after load is removed—a time-saving feature—this jack is popular for rerailing mine cars and locomotives.

1017
1020
1022

10 TONS—Single-acting, ratchet-lowering, with foot lift. Furnished with double round sockets and steel operating lever 1¼" x 60".

USES—For moving and repairing all types of machinery, road building equipment, streetcar trucks, bolsters and couplings on freight cars; and for erecting drilling rigs, beams, concrete forms, shoring. Model 1020 is standard for street railway cars; Model 1017 is popular for mine cars and locomotives.

1522
1528
2028

15 TONS—Single-acting, ratchet-lowering, with foot lift. Double round sockets and steel lever bar are standard.

USES—For industrial plants, mills, mines, contractors, railroads, riggers, truckers, public utilities, machine shops. A heavy-duty all-purpose jack for lifting, lowering, holding and moving all kinds of loads.

20 TONS—Single-acting, ratchet-lowering, with foot lift, double round sockets and steel lever 1¼" x 60".

USES—The heaviest, strongest, most powerful Duff-Norfon ratchet lowering jack. Ideal for the most difficult lifting, holding, moving and lowering jobs in mills, mines, railroads, public utilities plants and contractor operations.

Geared ratchet lowering jack

29-A

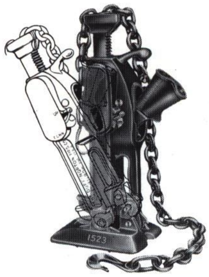
25 TONS—Single-acting, geared ratchet lowering jack with foot lift. Furnished with round, wooden operating lever 3⁵⁄₁₆" x 66" long. Because leverage is compounded by gears, heavy loads can be lifted quickly and easily.

USES—A favorite with riggers, oil drillers, heavy construction, forge and foundry shops and railroad repair shops. Also widely used for machinery repair, and by street railways for removing crossovers embedded in concrete.

Jack No.	514-MT	516-MT	521-MT	1017	1020	1022	1522	1528	2028	29-A
Capacity, Tons	5	5	5	10	10	10	15	15	20	25
Height, Inches	14	16	21	17¼	20	22	22	28	28	27¾
Raise, Inches	7½	9½	14½	9	10½	12½	11½	17½	18	15¼
Base, Inches	5¼x7¾	5¼x7¾	5¼x7¾	7x10¼	7x10¼	7x10¼	8x11	8x11	8x11	12
Head, Inches	2½x2¾	2½x2¾	2½x2¾	3x3	3x3	3x3	3x3½	3x3½	3x3½	3½ x3¾
Foot Lift Ht., Inches	1½	1½	1½	2¼	2¼	2¼	2½	2½	2½	2¾
Weight, Pounds	36	41	47	75	77	84	100	117	126	180
Rack Size	1¼x1½	1¼x1½	1¼x1½	1⅝x1⅝	1⅝x1⅝	1⅝x1⅝	1¾x2¼	1¾x2¼	1¾x2¼	2x2¼

Every Duff-Norton Ratchet Jack is *guaranteed* at full capacity for load applied to either head or foot lift.
Curved tops are now standard.
Slotted head for use with chain as a sling available with 516MT. 3½ feet of 7/16" chain supplied at extra cost.

RATCHET JACKS

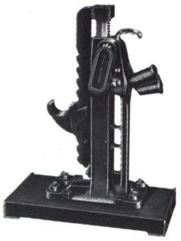


1523

4-way ratchet lowering jack

15 TONS—Single-acting, double round socket, ratchet lowering jack with slotted head, chain sling, claw, swivel base and foot lift. Furnished with steel combination operating lever and pinched end pry bar 1¼" x 60". Also with 5 feet of ½" BBB chain, with grab hook and pear-shape ring.

USES—For head, chain, claw and foot lifting. Swivel base increases versatility. Operates at full capacity at any angle. Claw increases support and protects against load shifting. Called "Roustabout" by oil drillers, it is used for rigging, tightening belts, lifting and lowering pipe and pole pulling.

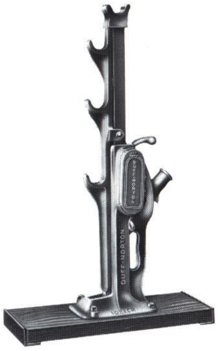


524-MCR

Ratchet reel jack with adjustable hook

5 TONS—Single-acting, ratchet lowering jack with adjustable hook, reinforced oak base, double round socket. Furnished with solid steel combination operating lever and pinched end pry bar 1" x 30" long.

USES—Holds reels 15 to 60 inches in diameter. To save time, adjustable hook is raised by hand to meet spindle. Will seat 2-inch spindles. Standard for phone and cable companies. Adapted to shop and warehouse use for handling reels of all kinds.

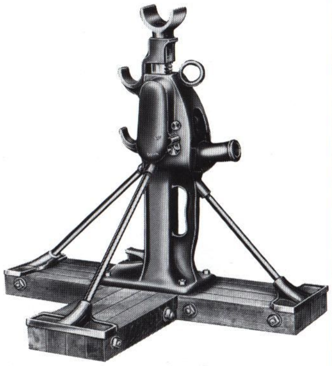


1022-CR

Ratchet reel jack with multiple hooks

10 TONS—Single-acting, ratchet lowering jack with top and triple side hooks. Furnished with single round sockets and solid steel combination operating lever and pry bar 1¼" x 60" long.

USES—Used in pairs for reels 25 to 90 inches in diameter on level ground in plants, warehouses, shipyards and public utilities. Rack is extra long. Hooks are located 12, 22½, 33 and 38 inches from ground and can handle spindles up to 2 inches in diameter. Solid oak base.



1030-CR

Ratchet reel jack with "T" frame base

10 TONS—Single-acting, ratchet lowering jack with top and double side hooks furnished in pairs—left and right hand. Furnished with single round socket and solid steel combination operating lever and pinched end pry bar 1¼" x 60" long.

USES—Used in pairs for reels 20 to 84 inches. Standard with utility companies. Swivel joint of head hook allows easy spotting without binding spindle. Rack bar hand-adjustable to meet load. Right and left hand models allow operators to work together. Top hook holds 3", lower hooks 2½" spindles.

See page 16 for Screw Reel Jacks.

Jack No.	1523		
Capacity, Tons	15	Head, Inches	2¾ x 4
Height, Inches	23	Foot Lift Height, Inches	2¼
Raise, Inches	12½	Weight of Jack Only, Lbs.	70
Base, Inches	7½ x 10¾	Weight of Jack Hook, Chain, Lever, Lbs.	124
Rack Size	1⅝ x 1⅝		

Jack No.	524-MCR	1030-CR	1022-CR
Capacity, Tons	5	10	10
Height, Inches Including Base	23¼	30	38
Raise, Inches	14	14	12
Base, Inches	8¾ x 18		9¾ x 24
Weight, Pounds	74	134	126
Rack Size	1¼ x 1½	1⅝ x 1⅝	1⅝ x 1⅝

Weights shown include operating lever where applicable.

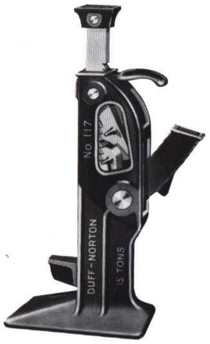
DUFF-NORTON TRACK JACKS

Alloy Steel Rack **Longer Life** **Lower Stress**
Heavier Rack Section **Maximum Safety**

These features have made genuine Barrett Duff-Norton Jacks the favorites of railroad men since 1883:

1. Tripping from either side is quick and positive. 2. Rack is 1⅝" square, ⅛" larger than ordinary jacks, for greater strength in lifting and holding loads. 3. Hardened steel wearing plate eliminates housing wear. 4. New sturdy spring assures positive pawl action, prevents accidental tripping of load. 5. Both pawls are spring loaded to assure engagement of teeth with rack. 6. Short pawl set to full length of socket lever gives greater bearing surface, greater distribution of load, reduces wear, gives longer life. 7. Closed end trunnion bushing retains lubricant. 8. Close fulcrum and correct socket angle provide high mechanical efficiency.

Because of *trip lowering feature* track jacks are not recommended for general industrial use. Ratchet lowering jacks are recommended for general industrial use.

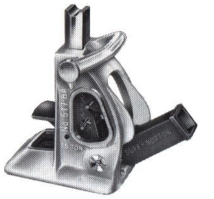


117
617

Single acting trip — Malleable

15 TONS — Single-acting, trip-lowering ratchet jacks with foot lift and thumb guard. Furnished with single square socket without lining bar.

USES — Standard with all the leading railroads for section gang work. These jacks are unexcelled for use in surfacing and lining rails. They are always safe and easy to spot.

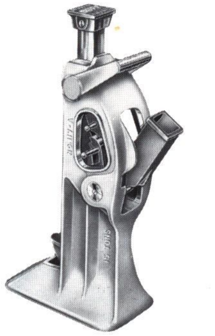


517-BA
717-BA

Single acting trip — Aluminum and Malleable

15 TONS — Low-height, single-acting, trip-lowering ratchet jack with broad toe foot lift (2½" x 3"), bale handle and thumb guard. Single square socket without lining bar.

USES — For surfacing, tamping and lining track, and for installing fish plates. Special grooved head fits under ball or under rail itself, depending on height of ballast. Rigid bail type handle for easy carrying and spotting.

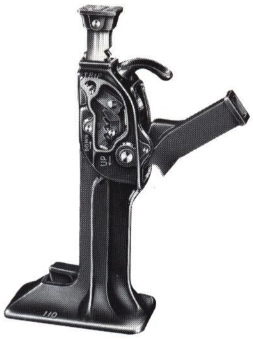


117-A

Single acting trip — Aluminum

15 TONS — Single-acting, trip-lowering jack with foot lift and thumb guard. Single square socket, without lining bar. This is same jack as No. 117 except it weighs 33% less because housing is made of strong aluminum alloy.

USES — Uses of aluminum track jacks permits workmen to move and spot jacks quickly. Crews can keep pace with fast, modern maintenance equipment.



1-A

Double acting trip — Malleable

15 TONS — Double-acting, trip-lowering ratchet jacks with foot lift. Single square socket without lining bar. Can be raised on both up and down strokes. Handset levers for trip are plainly marked, for safety.

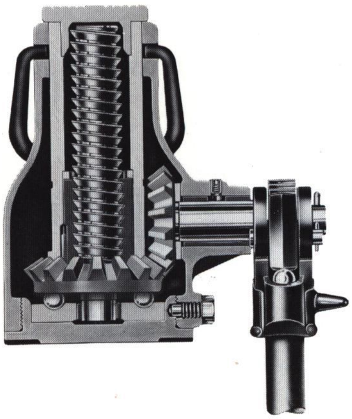
USES — Because of speed and high lift these jacks are recommended for extra gangs on track work. Also recommended for mines and industrial use. No. 1-A is trip lowering but not ratchet lowering.

Interchangeability of Parts

All parts for Nos. 117, 117-A, 517-BA, 717-BA and 617 are fully interchangeable except for racks and bases. Inventory problems are simplified since only a minimum of spare parts need be stocked.

Jack No.	117	117-A	617	517-BA	717-BA	1-A
Capacity, Tons	15	15	15	15	15	15
Height, In.	22	22	28	11½	14	22
Raise, In.	12	12	18½	5	7½	13
Base, In.	6½ x11	6½ x11	7x12	6½ x10¼	6½ x10¼	6½ x11
Head Dia., In.	3x3	3x3	3x3	. . .	. . .	3x3
Ft. Lft. Ht., In.	2	2	2	2	2	2
Weight Lbs.	70	45	87	30	34	60
Rack Size	1⅝ x1⅝	1⅝ x1⅝	1⅝ x1⅝	1⅝ x1⅝	1⅝ x1⅝	1⅝ x1⅝

DUFF-NORTON LOW-HEIGHT SCREW JACKS



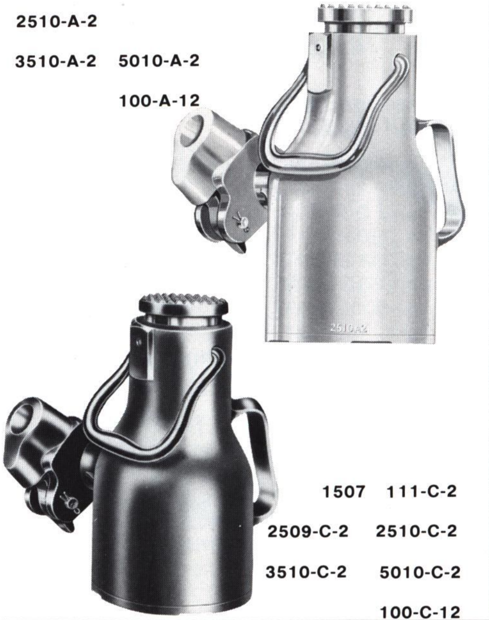
Made to exacting specifications from the best materials, these jacks are the finest of their type. The powerful lifting mechanism is totally enclosed, packed in grease and sealed to prevent leakage. Thread pitch on ball bearing mounted lifting screw gives maximum raise for each stroke of the lever bar. Positive safety stop prevents standard from being run out of base. Keyway prevents standard from turning under load. Easy to carry and spot.

Outstanding Construction Features: One-piece malleable iron or aluminum housing. Malleable iron base plate • Cold-drawn seamless steel standard • Drop-forged steel head • Heat-treated high-carbon steel screw • Molybdenum chrome steel heat-treated gears • Aluminum bronze nut provides high yield, tensile strength and exceptional resistance to wear and fatigue • Large molybdenum steel ball bearings • Special alloy steel ratchet assembly • Bronze bushed pinion shank and screw stem • Screw, gears and ball race machine-cut to gages.

JOURNAL JACKS • 15-25-35-50-100 Tons

Nos. 1507 and 111-C-2 ball bearing screw jacks are supplied with a ⅞" diameter steel combination operating lever. All other models of these ball bearing screw jacks are supplied with a 1⅛" diameter steel combination operating lever and pinched end pry bar in lengths: 28" for 15-ton; 36" for 25 and 35-ton; 48" for 50-ton; 36" for 25 and 35-ton; 48" for 50-ton; and 60" for 100 ton. Mechanical design permits safe operation at any angle or upside down.

USES—For powerful lifting in low height areas such as inspecting and renewing journal brasses, bridge and structural steel erection, shipbuilding, machine shop, mill and general industrial uses.



2510-A-2

3510-A-2 5010-A-2

100-A-12

1507 111-C-2

2509-C-2 2510-C-2

3510-C-2 5010-C-2

100-C-12

ALUMINUM JOURNAL JACKS • 25-35-50-100 Tons

Ball bearing screw jacks with one-piece aluminum alloy housing and malleable iron base plate, furnished with a 1⅛" diameter steel combination lever and pinched end pry bar in lengths: 36" for 25 and 35-ton; 48" for 50-ton; and 60" for 100-ton.

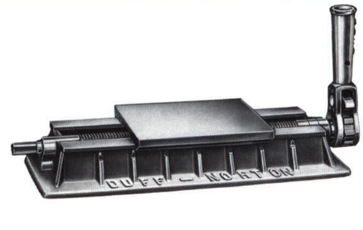
USES—Because of the aluminum alloy housing these jacks are 25% lighter than regular models. They are easier to handle and spot—save time on jobs where jacks are moved frequently. Non-rusting aluminum is ideal for outdoor exposure.

Jack No.	1507	111-C-2	2509-C-2	2510-C-2	2510-A-2	3510-C-2	3510-A-2	5010-C-2	5010-A-2	100-A-12	100-C-12
Capacity, Tons	15	15	25	25	25	35	35	50	50	100	100
Height, Inches	7	10	9	10	10	10	10	10	10	12	12
Raise, Inches	2½	5	4½	5	5	5	5	4½	4½	4	4
Base Dia., Inches	4¾	4¾	5⅜	5⅜	5⅜	5⅞	5⅞	7⅛	7 3/16	8¾	8¾
Head Dia., Inches	2⅝	2⅝	3	3	3	3⅝	3⅝	4	4	5	5
Weight, Pounds	27	31	46	48	40	57	46	77	64	120	157

TRAVERSING BASES

50-100 Tons—Screw propelled, two-way traversing bases. No. 40-TB-26 furnished with wooden operating lever 1 7/16" x 24". No. 41-TB-20 furnished with steel lever 1" x 24" long.

USES—For moving any type of jack horizontally while under load. Perfect for rerailing locomotives and cars, resetting heavy machinery. Ratchet socket applies to either end of shaft.



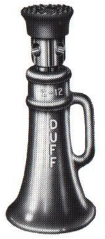
40-TB-26 41-TB-20

Base No.	40-TB-26	41-TB-20
Capacity, Tons	50	100
Height, Inches	4⅜	4
Horizontal Travel, In.	26	20
Weight, Pounds	134	151
Size of Plate, In.	10x12	14 Dia.

Weights shown include operating lever where applicable.

DUFF-NORTON SCREW JACKS

1½ x 8
1½ x 10
1½ x 12
1¾ x 10
2 x 8
2 x 10
2 x 12

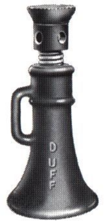


Bell Bottom Screw

12-16-20 TONS—Extra heavy, one-piece base. Heavy duty ball bearings reduce friction—making this the easiest operating jack on the market.

For all-purpose lifting and holding on construction jobs, rigging, moving buildings and in plants.

825-L



Locomotive Screw

25 TONS—One-piece, extra heavy, fully-enclosed base. Heavy duty molybdenum steel balls make it easy to handle capacity loads with little effort. Lifting screw is high manganese steel. Base sealed to keep out dirt and corrosion.

USES—Built to take severe punishment at full capacity without failure. For powerful lifting in locomotive repair shops and all general purpose work.

T-11

Telescope

10 TONS—Screw Jack with ratchet lever socket. Telescope head can be spun out quickly to meet load. Ratchet lever socket speeds up work, permits safe, easy use in close quarters.

USES—Used principally where low height and high raise are important in cramped places. Recommended for bridge work, concrete forms, car repairing and general construction work.

Jack No.	1½ x 8*	1½ x10*	1½ x12*	1¾ x10*	2x8*	2x10*	2x12*
Capacity, Tons	12	12	12	16	20	20	20
Screw Dia., Inches	1½	1½	1½	1¾	2	2	2
Closed Height, In.	10¾	12¾	14¾	13½	11¾	13¾	15¾
Extended Height, In.	15¾	19¾	23¾	21	16¾	20¾	24¾
Raise, Inches	5	7	9	7	5	7	9
Base Dia., Inches	6	6⅛	6½	6¾	6⅝	6¾	7¾
Head Dia., Inches	3⅛	3⅛	3⅛	3⅞	3⅞	3⅞	3⅞
Weight, Pounds	13	16	18	22	24	28	33

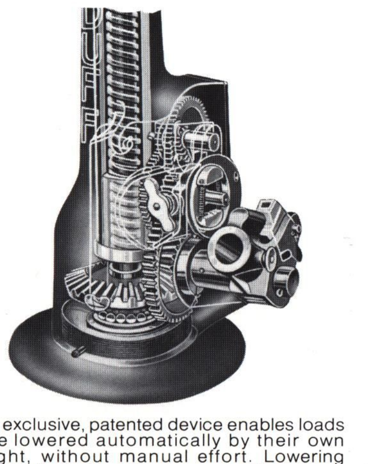
* Jack No. indicates both screw size and height of base in inches.

Jack No.	825-L
Capacity, Tons	25
Screw Dia., Inches	2
Height, Inches	12¼
Raise, Inches	4½
Base Dia., Inches	6¾
Head Dia., Inches	3⅞
Weight, Pounds	27

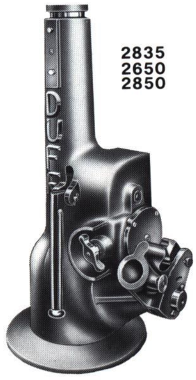
Jack No.	T-11
Capacity, Tons	10
Height, Inches	8⅜
Raise, Inches	7
Base Dia., Inches	7⅛
Head Dia., Inches	3½
Weight, Pounds	37

GOVERNOR-CONTROLLED • Self Lowering Mechanism

Thumb-screw controlled governor permits fingertip control of lowering speed.



This exclusive, patented device enables loads to be lowered automatically by their own weight, without manual effort. Lowering speed is limited to ½" per second. Speed can be slowed or stopped instantly by simply turning thumb-screw governor. Jack cannot creep while under load. *All types and capacities of Duff-Norton governor-controlled jacks are easily adaptable for operation by air motor or electric power.*



2835
2650
2850

35-50 TONS—High-speed, governor-controlled, self-lowering ball bearing screw jacks. Furnished with solid steel combination operating lever and inched end pry bar 1¼" x 60" long.

USES—For empty or loaded freight car work, loaded trailers, moving machinery—wherever a fine mechanical jack is needed for heavy lifting.

Jack No.	2835	2650	2850
Capacity, Tons	35	50	50
Height, Inches	28	26	28
Raise, Inches	15¾	13½	15½
Base Dia., Inches	12	14	14
Head Dia., Inches	4	5½	5½
Foot Lift Height, In.	. . .	. . .	. . .
Weight, Pounds	211	259	261

Universal Buggy

Buggy No.	810
Weight Pounds	54

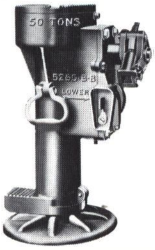
For easy handling of all heavy-duty screw jacks. Jack base slides easily into wedge-shaped grooves of buggy and jack is held securely in upright position.

DUFF-NORTON SELF-LOWERING SCREW JACKS

Thumb lever on side of jack gives positive control of lowering speed, with maximum safety.

Speed controlled, self-lowering device
Eliminates the slow, laborious job of lowering loads manually. A push on the thumb lever starts, stops and controls speed of lowering. Jack can be lowered fast or slow, under perfect control. Raises smoothly, quickly with minimum manual effort. Stop signal indicates when safe limit of raise is reached. All moving parts fully enclosed. *All types and capacities of speed-controlled, self-lowering jacks are adjustable for operation by air motor or electric power.*

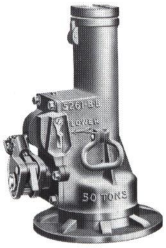
3265-BB
5265-BB
1265-BB



LARGE HEAD • Foot Lift
35-50-100 TONS – High-speed, self-lowering, ball bearing screw jacks with foot lift. Thirty-five-ton model furnished with steel combination operating lever and pinched end pry bar 1⅛" x 50". Others supplied with lever 1$\frac{3}{16}$" x 60".

USES – For installing, repairing and moving heavy equipment in plant, mills, railroad shops and shipyards. For engaging "in position" steel beams and shoring timbers. Foot lift permits use with low set loads.

5261-BB



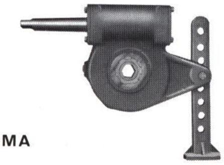
SMALL HEAD
50 TONS – High speed, self-lowering, ball bearing, inverted screw jack with small head. Furnished with combination operating lever and pinched end pry bar 1$\frac{3}{16}$" x 60" long.

USES – Inverted design gives maximum headroom for operating lever bar in cramped places. Small head makes it easy to spot under load. Ideal for bridge rigging machinery handling, moving power shovels, lifting locomotives and all heavy equipment.

1263-C

SMALL HEAD • Heavy Duty
100 TONS – High-speed, self-lowering, ball bearing screw jacks with small head. Furnished with solid steel combination operating lever and pinched end pry bar 1$\frac{3}{16}$" x 60" long. The ultimate in self-lowering heavy duty jacks.

USES – In great demand for lifting locomotives and cars, bridge and construction work and all jobs where constant use demands easy spotting, fast load engagement, high-speed lifting and trouble-free service.



571-MA

MOTOR ATTACHMENT • Norton Type
Converts all speed controlled, self-lowering jacks to motor operation with either rotary air or electric drill motors (1½" to 2" drill size). Reduces jacking time 90%. To install ratchet case assembly, slip motor attachment on shaft – quickly slipped off when lowering. No bolts or other fasteners needed. Adjustable torque foot rests on ground when used with jacks having ratchet case at bottom of jack. For jacks with ratchet case that raises with load, torque foot is placed against load.

Foot lift on Duff-Norton Screw Jacks are rated at one-half capacity of jacks.

Jack No.	3265-BB	5265-BB	1265-BB	5261-BB	1263-C
Capacity, Tons	35	50	100	50	100
Height, Inches	26	26	26	26	26
Raise, Inches	14	14½	12	14½	13½
Base Dia., Inches	12	14	13¾	13¾	13¾
Head Dia., Inches	6¾	10	10	6	7½
Foot Lift Height, In.	3¾	4¼	4½	...	...
Weight, Pounds	226	331	431	288	421

Input Shaft – #4 Morse Taper (#3 optional). Note: when ordering motor attachment, specify jack number with which attachment is to be used.

571-MA AIR MOTOR ATTACHMENT

The following table shows adapters & adapter bushings to be used for various Jacks.

Jack Numbers	Size of Adapter Hex.	Adapter No.	Adapter Bushing No.
S	.881	N-562	N-556
B-2522	1.024	N-563	N-556
B-3526, B-5024, 3265-BB	1.172	N-564	N-557
5261-BB, 5265-BB, 1263-C, 1265-BB	1.339	N-565	N-558
* 2650, 2825, 2835, 2850	1.500	N-567	N-559

* For Duff-Norton High Speed & Governor-Controlled Jacks, which are self-lowering, remove air motor attachment when lowering the jack.

DUFF-NORTON AIR MOTOR POWERED SCREW JACKS

Air motor powered screw jacks, engineered by Duff-Norton, represent the most modern development in heavy-duty lifting and lowering jacks. These precision-built, sturdy, dependable machines employ the time-tested basic screw principle with fool-proof, built-in rotary air motor.

As an example of the speed and economy of these mechanized jacks, one man —operating two jacks simultaneously*—can raise or lower in a few minutes the heaviest loaded freight car, diesel locomotive or truck trailer with a flick of his finger. The same job with hand-operated jacks would require four men a total of 35 to 40 minutes.

Made in six models in capacities from 20 to 100 tons. Note the outstanding features that have made these rugged tools so popular with both workmen and supervisors wherever continuous lifting and lowering is a daily job.

OUTSTANDING FEATURES

Brake on the air motor prevents accidental lowering.

Load is lowered entirely by air motor (as well as raised) so that the lowering speed is always under constant control; never any slipping or sudden dropping of the load that could result in injuries to men or equipment.

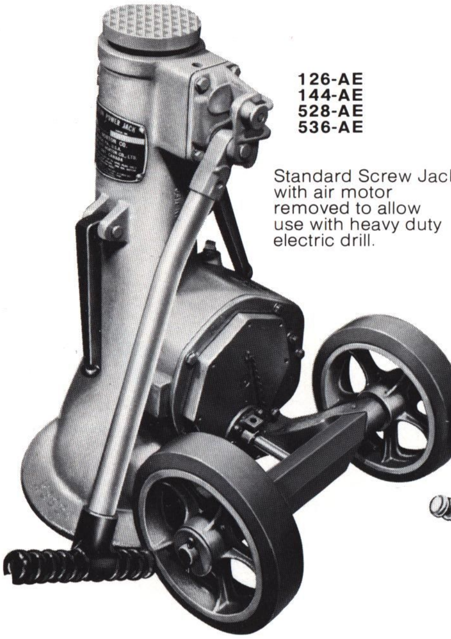
Design of jack prevents lowering or creeping under load in case of air failure due to disconnection or injury to the hose, completely assuring safety of the men working on the job.

Automatic shut-off cuts out the motor when the lifting standard reaches the safe limit of its raised or lowered position.

20-100 TONS —Screw jacks operated by rotary motors.

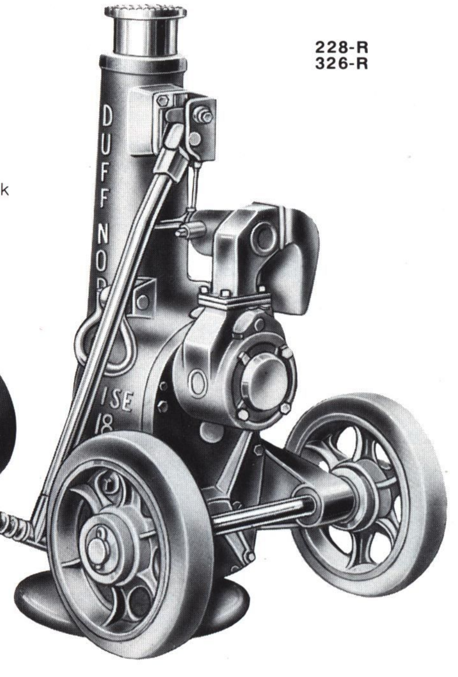
USES • Use for compression loads only.

- Jacking the heaviest railway locomotives and cars.
- Jacking the heaviest, loaded truck trailers.
- Rigging, handling heavy machinery and equipment.
- Pushing culvert pipe through solid earth or fill.
- Bridge moving.
- Sinking piling.
- Bridge repairs.
- Pressing bushings.
- Industrial forming work.

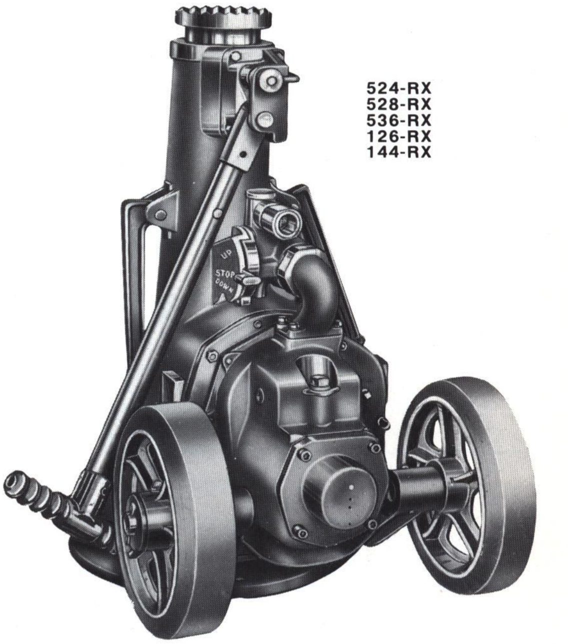


126-AE
144-AE
528-AE
536-AE

Standard Screw Jack with air motor removed to allow use with heavy duty electric drill.



228-R
326-R



524-RX
528-RX
536-RX
126-RX
144-RX

Jack No.	126-AE	144-AE	528-AE	536-AE	228-R	326-R	524-RX	528-RX	536-RX	126-RX	144-RX
Capacity, Tons**	100	100	50	50	20	35	50	50	50	100	100
Height, Inches	26	44	28	36	28	26	24	28	36	26	44
Raise, Inches	13¾	30	17	25	18	14¾	12½	17	25	13¾	30
Base Dia., Inches	13	18	14	15	12	14	14	14	15	13	18
Head Dia., Inches	6⅛	6⅛	5	5	4	4	5	5	5	6⅛	6⅛
Weight, Pounds	402	484	348	379	240	275	370	394	425	448	530

**All Duff-Norton Air Motor Powered Screw Jacks can lift rated capacity with only 85 lbs. air pressure.

Air Line Filter Lubrication is recommended for these jacks.

* "Y" connection for operating two jacks simultaneously consists of 20-ft. sections of ¾" hose with necessary ends, snap couplings, clamps and "Y" valves. Available at extra cost.

DUFF-NORTON SCREW JACKS

520-CR
530-CR

REEL JACKS "A" Frame Base

5 TONS—Screw jack with "A" frame base and three-way nut. Frame is made of L-shape steel angles. Lateral spread of legs is 38½", for firm support. No. 520-CR holds reels 42" to 60" diameter; No. 530-CR holds 60" to 90" reels. Lifting hook takes spindles up to 2½" diameter.

USES—For lifting and holding reels of cable, wire rope and belting in shops and warehouses. Operates fast and easily. See 5 and 10-ton ratchet reel jacks on page 10.

1024 1029 1538

PUSH AND PULL JACKS

10-15 TONS— Screw jacks with ratchet lever sockets. Furnished with wooden operating lever 1 7/16"x24", except 1538 square socket without lining bar. Equipped with spring actuated pawls, for safety.

USES—For erecting bridges, docks tanks and piling, and for pulling together or pushing apart steel plates and beams. Also valuable for straightening sides of freight cars and truck bodies.

Jack No.	520-CR	530-CR
Capacity, Tons	5	5
Height, Inches	20	30
Raise, Inches	11½	16½
Base, Inches	12½x26⅝	15¼x39½
Weight, Pounds	87	110

Jack No.	1024	1029	1538
Capacity, Tons	10	10	15
Screw Dia., Inches	2	2	2½
Pushing Closed, In.	7¾	7¾	7½
Pushing Extended, In.	21½	25½	34
Pulling Closed, In.	5¾	5¾	7½
Pulling Extended, In.	19½	23½	34
Weight, Pounds	48	51	98
Overall Screw Length, In.	24	28	38

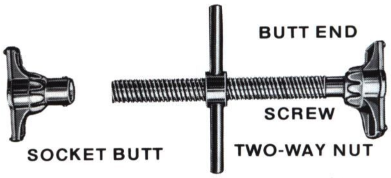
1001-1015

STEEL TRENCH BRACES—Complete

For safe, economical bracing on all trench and excavating jobs. Ball and socket joint at each end of brace permits rapid adjustment to any angle. Lugs on each shoe face grip planking firmly. Two-way lever nut with blunt ends is standard.

Adaptable to any width trench by using different lengths of standard pipe.

Three-way lever nut permits working in close quarters where regular two-way nut cannot be used. Holes in nut take 1" round operating lever.



C-14—C-19

TRENCH BRACE FITTING for make-it-yourself use

Buy only the butt ends, screws, nuts and socket butts. Then cut your own pipe to desired lengths and assemble your own trench braces. See table below for specifications. Screw ends and socket butts can be furnished separately.

C-24—C-31-10

STEEL TIMBER BRACE FITTINGS

For making wooden timbers adjustable to various widths for bracing concrete forms, subways, excavations and inside trenches. Screw ends are the same as those in the steel trench braces. Timber caps can be furnished separately.

Steel trench bracer complete with pipe

Brace No.	1001	1002	1003	1004	1005	1006	1007	1008	1009	1011	1012	1013	1014	1015
Pipe Size	1½	1½	1½	1½	1½	1½	1½	1½	1½	2	2	2	2	2
Screw Dia.	1 11/32	1 11/32	1 11/32	1 11/32	1 11/32	1 11/32	1 11/32	1 11/32	1 11/32	1⅞	1⅞	1⅞	1⅞	1⅞
Length of Brace Closed, Inches	16	18	21	24	27	30	36	42	48	36	42	48	54	60
Length of Screw, Inches	10	12	14	14	16	16	18	18	18	18	18	18	18	18
Safe Extension of Screw, In.	6	7	8	8	9	9	10	10	10	10	10	10	10	10
Weight, Pounds	14	15	16	16	17	18	20	21	24	39	40	42	44	46

Screw length is measured from center of ball to end of screw. The thread is 2" shorter.

Steel trench brace fittings without pipe

Brace Fitting No.	C-14 C-32*	C-15 C-33*	C-16 C-34*	C-17 C-35*	C-18 C-36*	C-19 C-37*
Screw Dia., Inches	1 11/32	1 11/32	1 11/32	1 11/32	1 11/32	1⅞
Screw Length, Inches	10	12	14	16	18	18
Safe Extension of Screw, In.	6	7	8	9	10	10
Weight, Lbs.	11	12	13	14	14	31

*Without socket butt

Steel timber brace fittings

Timber Brace No.	C-24 X-671†	C-25 X-672†	C-29 X-672†	C-30 X-688†	C-31 X-689†	C-31-10 X-691†
Screw Dia., Inches	1 11/32	1 11/32	1 11/32	1⅞	1⅞	1⅞
Screw Length, In.	14	14	18	18	18	18
Timber Cap, Inches	4x4	6x6	6x6	6x6	8x8	10x10
Weight, Lbs.	12	14	15	28	31	33

†Timber caps only

MINE TIMBERING AND ROOF JACKS

COMPLETE JACKS: Duff-Norton supplies complete jacks to your specifications for heads, handles, bases and lengths. Structural members are square, cold-drawn seamless tubing with solid, welded base. Completely silver-gray enameled for high visibility.

FITTINGS ONLY: For customers who prefer to make their own jacks, Duff-Norton supplies heads, screw handles and bases. Customer supplies 2" standard or extra strength pipe, depending on whether 8 or 16-ton capacity is desired. Fittings can be switched to various lengths of pipe as desired.

Quick Facts About Jack Fittings

- Screws are steel drop forgings, heat treated and accurately machined.
- One man can lift timbers or beams with ease.
- Five types of heads available for safety seating H-Beams, rails, round or square timbers, or for direct application against mine roof.
- Three types of handles and three types of bases available.
- All fittings are available in any combination.

Fittings

Heads

TYPE "H"—used with 4" H-Beams or rails.

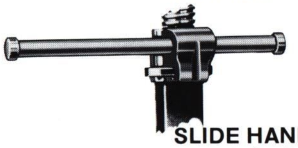
TYPE "B"—ball and socket with non-slip lugs for flat timbers, beams or direct contact to roof.

TYPE "I"—available in 6½", 8¼" and 11¼" sizes for H-Beams, round or square timbers.

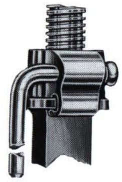
TYPE "L"—for supporting ends of timbers, beams or rails at desired angle.

TYPE "V"—for various diameter round timbers.

Handles



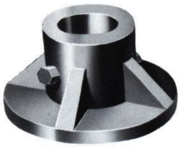
SLIDE HANDLE—for extra leverage in close quarters.



DROP HANDLE—similar to the slide handle except it folds down when not in use.

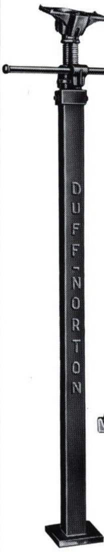
WING NUT HANDLE—for open areas where a firm, two-handed grip is possible.

Bases



ROUND BASE—cored pocket to fit on standard or extra strong pipe, with 7⁄16" diameter hole to fasten fitting to pipe. Use with ⅜" diameter bolt.

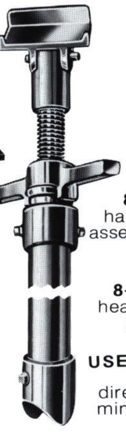
"VEE TYPE" ROUND BASE—(round fishtail) cored pocket to fit standard or extra strong pipe, with 7⁄16" diameter hole to fasten fitting to pipe. Use with ⅜" diameter bolt. The end is grooved to fit over 1½" diameter pin.



COMPLETE JACKS

8-16 TONS—Screw jacks complete with square seamless cold-drawn tubing body. Solid, square base. Choice of heads and handles.

USES—For cross timbering, mine roof support and protection of working areas. Will serve as safe support under most difficult roof conditions until permanent timbering is installed. Also used as temporary props when setting loading and conveyor machinery and roof bolting.



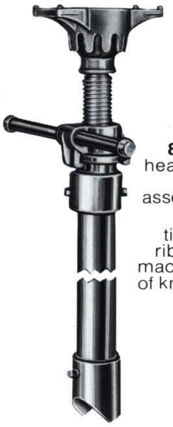
FITTINGS ONLY

8-16 TONS—Screw jack heads, handles and bases (see below) for assembling your own timbering and roof jacks.

ANGLE JACK

8-16 TONS—Screw jack with "L" head, choice of handles and fishtail bases with or without tubing, for assembling your own jacks.

USES—When used as an angle jack the fishtail base can be placed directly on steel pins driven into the mine wall. (These jacks can also be furnished complete to your specifications.)



PIN TIMBERING JACKS

8-16 TONS—Screw jack with "B" heads, choice of handles and fishtail base *without tubing*, for simple assembly of your own pin timbering.

USES—For supporting cross timbers from steel pins driven into rib holes above floor level to permit machinery to operate without danger of knocking out floor posts. (Can also be furnished complete to your individual specifications.)

For pin timbering or angle jacks with square tubing, specify MR-8 or MR-16. For round tubing, (Pipe Not Furnished) specify MR-80 or MR-160.

MR-8 (Capacity 8 tons)

Minimum Height Closed	Maximum Height Open	MR-8 Weight Pounds	MR-16 Weight Pounds
30"	45"	31	45
36"	51"	33	48
42"	57"	34	51
48"	63"	36	54

MR-16 (Capacity 16 tons)

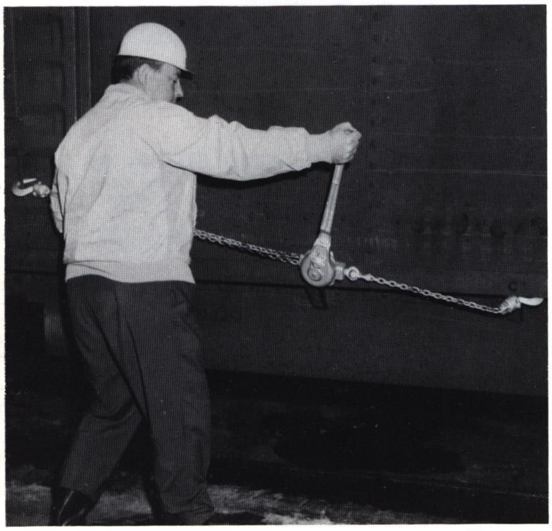
Minimum Height Closed	Maximum Height Open	MR-16 Weight Pounds	Minimum Weight Pounds
54"	69"	38	56
60"	75"	40	59
66"	81"	42	62
72"	87"	43	65

PIPE NOT FURNISHED

Jack No.	Capacity Tons	Screw Dia. Inches	Screw Raise Inches	Pipe Column to be used	Weight Pounds
MR-80	8	1 7⁄16	15	2" Standard	26
MR-160	16	1⅞	15	2" Extra Strength	35

Heights given are for type "B" heads. For other heads deduct 2" on MR-8 models, 1½" on MR-16 models. MR-8 screws are 1½" diameter. MR-16 screws 1⅞" diameter.

DUFF-NORTON CAR DOOR OPENER



RADO-15 Safe, easy operation, less maintenance

Specially designed for car door opening. Ratchet and pawl lever unit provides efficient power at moderate cost. Made of lightweight, corrosion-resistant, high strength aluminum alloy.

Top hook, equipped with standard 18-inch length of coil chain, provides great flexibility in reaching anchor points such as eye bolts, grab irons and underframe members around corners and side sills. RADO-15's top hook and chain arrangement eliminates undue stress on opener frame.

Car door opener can be quickly dismantled for inspection and periodic maintenance. Requires only 59 pounds of lever force at unit's 1,500-pound rated capacity.

Specifications

RADO-15 Car Door Opener. Rated capacity: 1,500 pounds. Take-up: 5 feet. Approximate net weight: 15½ pounds. Lever length: 20½ inches. Minimum increments in pulling position: .451 inches. Top hook equipped with 18-inch standard length chain. Additional lengths available at extra cost. Grab hook available.

Duff-Norton Authorized Repair Stations

There are more than sixty-five authorized Duff-Norton Repair Stations strategically located throughout the United States. All of them have the experience and facilities to provide fast, efficient repair service. Call your Duff-Norton distributor or write direct to Duff-Norton Company for the names and addresses of the repair stations nearest you.

Duff-Norton

Amstar

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